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INTEGRATED CROP MANAGEMENT

Evaluating soil moisture before field preparation and planting

With field preparation starting and planting fast approaching, it is important to know your soil moisture status. Knowing the soil moisture is very important to reduce the impact of field operations on soil compaction. Currently, soil moisture levels across the state are very good. However, as spring progresses, chances for heavy rainstorms increase just as spring field preparation and planting become time sensitive. There are several methods that can be used to evaluate soil moisture in the field that are simple, practical, and relatively fast.



Determining soil moisture by hand only gives relative soil moisture and is less accurate than other methods.

One method of evaluating soil moisture is the **hand feel and soil appearance method**. This method requires field experience in estimating soil moisture. A handful of soil is kneaded for each 1-foot soil depth increment through the active root zone of 4-5 ft (Table 1). This method requires a hand soil probe, training, and practice. Determining soil moisture by hand only gives relative soil moisture and is less accurate than other methods. Soil texture plays an important role in determining soil moisture by hand, where the soil shape, moisture traces left on your hand, and consistency of the soil are significantly different among different soil textures. Knowing your soil texture can easily enable you to have a very good idea about soil moisture status by consulting soil characteristics in Table 1.

A second method of evaluation that can be used with much better accuracy is **gypsum blocks** or moisture blocks. These blocks can be placed at several soil depths within the root zone. The blocks are installed for the entire season and are read with an electronic resistance meter, which determines the percentage of water available at each soil depth. While moisture blocks are much more accurate than the hand feel method, they are more costly and require proper installation. However, after installation, water availability can easily be determined throughout the growing season.

Other methods for soil moisture evaluation exist but are typically used in research projects, require training, and are expensive. Monitoring soil moisture prior to spring fieldwork and planting is useful for avoiding unwanted soil compaction and allows for timely changes to management practices to better utilize available soil moisture. Monitoring soil moisture

throughout the season is important because soil moisture is one of the most limiting factors in crop production.

Table 1. Guide for estimating soil moisture

Soil Moisture Remaining (Field Capacity)	Moderately Coarse Texture	Medium Texture	Fine and Very Fine Texture
100%	Upon squeezing, no free water appears on soil but outline of ball is left on hand.		
100-75%	Forms a weak ball, breaks easily when bounced on hand.	Forms a ball, very pliable, slicks readily.	Easily ribbons out between thumb and forefinger.
75-50%	Will form a ball, but falls apart when bounced in hand.	Forms a ball, slicks under pressure.	Forms a ball, will ribbon out between thumb and forefinger.
50-25%	Appears dry, will not form ball with pressure.	Crumbles, holds together with pressure.	Somewhat pliable, will ball under pressure.
25-0%	Dry, loose, flows through fingers.	Powdery, crumbles easily.	Hard, difficult to break into powder.

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